

2015 DMR analysis summary and tables

28 August 2015

Summary

1. Calculation of halibut discard mortality rates (DMRs) in the 2012, 2013 and 2014 Alaska groundfish fisheries was performed from observer data collected in the respective years. The 2014 data set was provided by the North Pacific Observer Program in early August 2015; the 2012 and 2013 data sets were obtained previously.
2. The data preparation and processing used the same procedures as used by IPHC staff in previous analyses, e.g., Williams (2013).
3. Summary tables of the results are appended to this memo. A full report will be provided for IPHC's RARA in November.

Results

1. The DMRs calculated in this analysis are generally in line with what's been seen in earlier years, especially for major fisheries, such as BSA trawl pollock, yellowfin and rock sole, BSA H&L cod; and GOA trawl cod, rex and flathead soles, and rockfish, and H&L cod. (Tables 2-3)
2. The number of hauls in which halibut viability was sampled appears to be declining. This is very troubling, because most fisheries (and vessels) have many hauls available for sampling.
3. In addition, it appeared that fewer halibut were sampled when sampling occurred. I noticed many instances of only one halibut sampled per haul, which is inadequate for DMR analysis and difficult to justify as a representative sample. For example, in the 2014 data set, 41.5% of trawl/pot samples had just one halibut in the haul's viability sample, and 70% had 3 or less. For 2014 H&L samples, 24% had only one halibut sampled, and 79% had 5 or less. I've noticed this a bit in past analyses but not to the extent seen in this year's work.
4. I believe the above data paucity contributed to the abnormally high DMRs calculated for the 2013-2014 BSA and GOA pot cod fisheries, and is likely a factor in other targets.
5. I filled in the table originally constructed in the NMFS analysis (Armstrong et al. 2015) with the 2012-2014 results. My results agree fairly closely with what they came up with. In a couple of cases, our results are identical but in others, they differ by 5-10%. But generally I found my results to be very similar. (Table 5)

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Table 4. Summary of halibut discard mortality rates (DMRs), expressed as percentages, in the Community Development Quota (CDQ) Bering Sea/Aleutian (BSA) groundfish fisheries during 1998-2014.

Table 5. AKFIN's replication of the annual DMR calculation process, for select target fisheries, compared to IPHC calculations (*with additions*)

Table 1. Groundfish target definitions and target determination criteria for observer sampled hauls.

BSA		GOA	
Target	Definition	Target	Definition
A	Atka mackerel	A	Atka mackerel
B	Bottom pollock	B	Bottom pollock
C	Pacific cod	C	Pacific cod
F	Other flatfish	D	Deep water flatfish
K	Rockfish	H	Shallow water flatfish
L	Flathead sole	K	Rockfish
O	Other spp.	L	Flathead sole
P	Midwater pollock	O	Other spp.
R	Rock sole	P	Midwater pollock
S	Sablefish	S	Sablefish
T	Greenland turbot	W	Arrowtooth flounder
W	Arrowtooth flounder	X	Rex sole
Y	Yellowfin sole		

CDQ and Non-CDQ TARGET FISHERY DETERMINATION

Bering Sea/Aleutians

P	if pollock \geq 95% of total catch, or
W	if arrowtooth flounder \geq 65% of total catch.
Y/R/L/F	if (rock sole + other flatfish + yellowfin sole + flathead) is the largest component of the retained catch using this rule:
Y	if yellowfin sole is \geq 70% of (rock sole + other flatfish + yellowfin sole + flathead sole), or
R	if rock sole > other flatfish and rock sole > flathead sole, or
L	if flathead sole > other flatfish and flathead sole > rock sole, or
F	if none of the three conditions above are met.

Note: If target is not P, W, Y, R, L or F, then target is whichever species or species group (A, B, C, K, O, S, or T) forms the largest part of the total catch.

Gulf of Alaska

P	if pollock \geq 95% of total catch, or
W	if arrowtooth flounder \geq 65% of total catch.

Note: If target is not P or W, then target is whichever species or species group (A, B, C, D, H, K, L, O, S, or X) forms the largest part of the total catch.

Table 2. Summary of halibut discard mortality rates (DMRs), expressed as percentages, in the non-CDQ Bering Sea/Aleutian (BSA) groundfish fisheries during 1990-2014.

Gear/Target	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14
<i>BSA Trawl</i>																									
Atka mackerel	66	77	71	69	73	73	83	85	77	81	77	73	85	67	63	67	64	89	90	90	87	67	90	90	86
Bottom pollock	68	74	78	78	80	73	79	72	80	74	67	74	78	65	73	79	74	69	79	88	78	85	87	86	86
Pacific cod	68	64	69	67	64	71	70	67	66	69	69	69	69	67	70	81	77	78	61	76	63	65	63	45	54
Other Flatfish	80	75	76	69	61	68	67	71	78	63	76	81	77	79	80	65	82	-	41	-	-	-	-	-	-
Rockfish	65	67	69	69	75	68	72	71	56	81	89	85	73	84	68	79	90	87	73	83	67	87	90	83	90
Flathead sole	-	-	-	-	67	62	66	57	70	79	74	69	60	69	70	83	75	80	79	75	82	55	20	81	87
Midwtr pollock	85	82	85	85	80	79	83	87	86	87	88	89	90	89	88	90	90	90	85	84	87	86	90	85	90
Rock sole	64	79	78	76	76	73	74	77	79	81	75	77	83	82	85	84	83	83	86	88	88	84	87	89	87
Sablefish	46	66	-	26	20	-	-	-	-	90	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbot	69	55	-	-	58	75	70	75	86	70	74	68	75	67	31	82	-	-	-	-	-	-	-	-	-
Arrowtooth fldr	-	-	-	-	-	-	-	-	-	-	-	-	-	67	67	90	-	-	78	-	-	-	-	-	-
Yellowfin sole	83	88	83	80	81	77	76	80	82	78	77	74	77	81	86	85	87	77	87	87	85	79	82	84	83
<i>BSA Pot</i>																									
Pacific cod	12	4	12	4	10	10	7	4	13	9	13	6	5	6	7	3	8	15	4	11	12	13	8	72	50
<i>BSA Longline</i>																									
Pacific cod	19	23	21	17	15	14	12	11	11	12	12	12	10	8	10	8	10	9	8	8	9	9	9	9	8
Rockfish	17	55	-	6	23	-	20	4	52	-	12	10	4	-	-	-	-	-	-	-	-	-	-	-	-
Sablefish	14	32	14	13	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbot	15	30	11	10	14	9	15	22	18	17	14	6	23	7	4	6	8	-	17	35	6	9	4	11	4

Table excerpted from Armstrong et al. (2015) "Calculating halibut discard mortality rates for the Alaska groundfish fisheries".

Values in bold type for 2012-2014 are the results of the latest analysis by G. Williams

Table 5 AKFIN's replication of the annual DMR calculation process, for select target fisheries, compared to IPHC calculations

Year	Trawl								Longline	
	Pacific cod		Yellowfin sole		Rock sole		Flathead sole		Pacific cod	
	IPHC	AKFIN	IPHC	AKFIN	IPHC	AKFIN	IPHC	AKFIN	IPHC	AKFIN
2000	69%	67.50%	77%	75.25%	75%	69.64%	74%	66.98%	12%	12.26%
2001	69%	64.69%	74%	71.71%	77%	72.57%	69%	64.59%	12%	12.23%
2002	69%	71.28%	77%	75.52%	83%	79.93%	60%	61.84%	10%	10.82%
2003	67%	63.69%	81%	77.89%	82%	80.70%	69%	67.55%	8%	8.50%
2004	70%	69.78%	86%	82.54%	85%	83.84%	70%	62.44%	10%	10.10%
2005	81%	76.73%	85%	85.30%	84%	82.82%	83%	76.97%	8%	9.00%
2006	77%	70.43%	87%	85.02%	83%	82.07%	75%	68.71%	10%	10.42%
2007	78%	71.17%	77%	86.83%	83%	82.95%	80%	80.71%	9%	8.85%
2008	61%	61.19%	87%	86.92%	86%	88.06%	79%	71.24%	8%	8.35%
2009	76%	71.68%	87%	88.12%	88%	87.71%	75%	71.53%	8%	8.05%
2010	63%	66.50%	85%	82.61%	88%	87.98%	82%	85.78%	9%	9.81%
2011	65%	65.41%	79%	83.52%	84%	78.80%	55%	52.67%	9%	9.13%
2012	63.2%	69.62%	82.3%	79.59%	87.1%	87.57%	20.0%	20.00%	9.0%	9.02%
2013	45.4%	44.16%	84.4%	84.31%	88.5%	86.61%	81.4%	84.34%	8.6%	8.68%
2014	54.1%	55.58%	82.8%	84.17%	87.0%	87.39%	86.5%	88.75%	7.9%	8.29%

Note: Although not titled as such, the table contains data only from BSAI targets.